

Notice of Allowability

Application No.

10/671,085

Examiner

Roberts Culbert

Applicant(s)

LI ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the inquiry filed 3/21/05.
2. ☒ The allowed claim(s) is/are 1-31.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Allowable Subject Matter

Claims 1-31 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art of record fails to teach or render obvious a method for forming a read transducer, comprising: forming, over a sensor, a first hard layer having a width for defining a width of the sensor, forming, on a first and second side of the sensor and hard layer, a hard bias layer having a height substantially equal to a height of the sensor; forming a lead layer over the hard layer and the hard bias layer; forming a second hard layer over the lead layer; forming, over the second hard layer, a top mask layer having an opening substantially equal to the width of the sensor; removing a portion of the second hard layer and a portion of the lead layer accessible through the opening in the top mask layer; removing the top mask layer; and shaping a remaining portion of the second hard layer and a remaining portion of the lead layer to a desired form as recited in claim 1.

Prior art methods (see for example *U.S. Patent Application Publication 2004/0027730 to Lille*) of forming a read transducer typically comprise forming, over a sensor, a first hard layer having a width for defining a width of the sensor, forming, on a first and second side of the sensor and hard layer, a hard bias layer having a height substantially equal to a height of the sensor; forming a lead layer over the hard layer and the hard bias layer, but do not teach forming a second hard layer over the lead layer; forming, over the second hard layer, a top mask layer having an opening substantially equal to the width of the sensor; removing a portion of the second hard layer and a portion of the lead layer accessible through the opening in the top mask layer; removing the top mask layer; and shaping a remaining portion of the second hard layer and a remaining portion of the lead layer to a desired form as recited in claim 1. See for example *U.S. Patent Application Publication 2004/0027730 to Lille*.

Further the prior art of record fails to teach a method for forming a read transducer, comprising: forming a sensor layer over a first gap layer; forming, over the sensor layer, a first hard layer; forming over the first hard layer a photoresist having a width equal to a desired width of a sensor, removing portions of the first hard layer and the sensor layer not blocked by the photoresist to form a sensor;

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removing the photoresist; forming a hard bias layer on a first and second side of remaining portions of the first hard layer and sensor layer; and processing a second hard layer, a lead layer and a masking layer formed over the hard bias layer and the remaining portions of the first hard layer and sensor layer using CMP polishing, ion etching and ion milling to prevent non-uniformity of layer thickness near the sensor.

Prior art methods (see for example *U.S. Patent Application Publication 2004/0027730 to Lille*) of forming a read transducer typically comprise forming a sensor layer over a first gap layer; forming, over the sensor layer, a first hard layer; forming over the first hard layer a photoresist having a width equal to a desired width of a sensor, removing portions of the first hard layer and the sensor layer not blocked by the photoresist to form a sensor; removing the photoresist; forming a hard bias layer on a first and second side of remaining portions of the first hard layer and sensor layer; and processing a lead layer and a masking layer formed over the hard bias layer and the remaining portions of the first hard layer and sensor layer using CMP polishing, ion etching and ion milling, but do not teach a method including processing a second hard layer, a lead layer and a masking layer formed over the hard bias layer and the remaining portions of the first hard layer and sensor layer using CMP polishing, ion etching and ion milling to prevent non-uniformity of layer thickness near the sensor as recited in the context of claim 21.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 6,315,875 to Sasaki and U.S. Patent Application Publications 2002/0089794 to Chang et al. 2004/0027730 to Lille and 2005/0067374 to Baer et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (8:30-5:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. Culbert



P.L.

**PARVIZ HASSANZADEH
SUPERVISORY PATENT EXAMINER**